ECOLOGICAL ASSESSMENT OF GLYPHOSATE TOLERANT CROPPING SYSTEMS. Curtis N. Bensch, Kassim Al-Khatib, and Charles W. Rice, Research Associate, Associate Professor and Professor, Department of Agronomy, Kansas State University, Manhattan, KS 66506.

The exclusive use of postemergent herbicides in herbicide resistant crops can have an impact on the agroecosystem. Field studies were conducted in 2001 at Manhattan and Hays, Kansas to determine ecological benefits associated with glyphosate tolerant cropping systems under conventional and no-till practices. The experiments were established as a randomized complete block design with a split-plot (Hays) or strip-plot (Manhattan) arrangement with three replications. The main plot treatments consist of a conventional PRE herbicide, glyphosate early POST, or glyphosate late POST. The subplot tillage treatment is either conventional tillage or no-till. The crop rotation scheme for Manhattan is soybean/corn/soybean/corn over the four years of the study, and corn/fallow/wheat/corn rotation at Hays. Experimental data being taken to assess the ecological impact include data on soil nematodes, soil microbial biomass, substrate induced respiration of soil microbes, microbial community analysis using Biolog MicroPlates™, weed seed bank, soil moisture, residue cover, *Rhizobium* nodulation on soybean, *mycorrhiza* colonization of corn roots, water infiltration, and earthworm populations.